

Title (en)

Control apparatus for an in-cylinder injection internal combustion engine

Title (de)

Steuereinrichtung für Brennkraftmaschine mit Einspritzung in den Zylinder

Title (fr)

Dispositif de commande pour moteur à combustion interne à injection dans les cylindres

Publication

EP 0824188 B1 20030604 (EN)

Application

EP 97113698 A 19970807

Priority

- JP 21080596 A 19960809
- JP 30048396 A 19961112

Abstract (en)

[origin: EP0824188A2] An engine control unit of a control apparatus for an in-cylinder injection internal combustion engine sets a fuel injection timing for a compression-stroke injection mode in accordance with a fuel injection quantity, and corrects the fuel injection timing according to an engine cooling water temperature. When the cooling water temperature is lower than a temperature observed when a warm-up operation is completed, the fuel injection timing for the compression-stroke injection mode is corrected for advance or retard on the basis of the engine characteristic proper, and fuel is injected at an appropriate time such that the fuel evaporation rate and the fuel stratification degree which permit the stabilized combustion of the fuel injected into the combustion chamber are attained, whereby the fuel is evaporated satisfactorily. Thus, the occurrence of misfire and the emission of harmful gas components can be restrained effectively during the warm-up operation in the compression-stroke injection mode. <IMAGE>

IPC 1-7

F02D 41/40; **F02D 41/34**; **F02D 41/06**

IPC 8 full level

F02D 41/06 (2006.01); **F02D 41/30** (2006.01); **F02D 41/34** (2006.01); **F02D 41/40** (2006.01); **F02B 75/12** (2006.01)

CPC (source: EP KR US)

F02D 41/064 (2013.01 - EP US); **F02D 41/068** (2013.01 - EP US); **F02D 41/3011** (2013.01 - EP US); **F02D 41/3029** (2013.01 - EP US); **F02D 41/3076** (2013.01 - EP US); **F02D 41/345** (2013.01 - EP US); **F02D 41/40** (2013.01 - KR); **F02D 41/401** (2013.01 - EP US); **F02B 2075/125** (2013.01 - EP US); **F02B 2275/18** (2013.01 - EP US); **F02D 2041/389** (2013.01 - EP US); **Y02T 10/12** (2013.01 - EP US); **Y02T 10/40** (2013.01 - EP US)

Citation (examination)

JP H04183924 A 19920630 - TOYOTA MOTOR CORP

Cited by

EP0992667A3; EP0864734A3; EP0856655A3; EP1199460A3; EP1408223A1; EP1083327A3; EP1431556A3; US6647949B2; US6647948B2; US6647952B2

Designated contracting state (EPC)

DE FR GB SE

DOCDB simple family (publication)

EP 0824188 A2 19980218; **EP 0824188 A3 19990602**; **EP 0824188 B1 20030604**; DE 69722527 D1 20030710; DE 69722527 T2 20040429; KR 100233931 B1 19991215; KR 19980018551 A 19980605; US 5797367 A 19980825

DOCDB simple family (application)

EP 97113698 A 19970807; DE 69722527 T 19970807; KR 19970038089 A 19970809; US 90751097 A 19970808